What is claimed is:

1. A method for generating a sheet metal model that can be unfolded automatically, from a solid model obtained

5   by modeling an outer shape of a sheet metal product in a three-dimensional sheet metal CAD/CAM system, the method comprising the steps of:

assigning entered attribution information including material and thickness of a sheet metal to a specified

10   solid model;

assigning entered designation information for designating an open plane and a bending portion to the solid model;

obtaining a minimum radius of curvature at the

15   bending portion from the material and the thickness of the sheet metal;

generating a downsized model defined by the designated open plane and a plurality of planes that are generated by moving a plurality of planes of the solid

20   model except the open plane inward in parallel by a distance that is a sum of the thickness of the sheet metal and the minimum radius of curvature;

generating inner wall surfaces by moving a plurality of surfaces of the downsized model except for the open

25   plane outward in parallel by a distance that is equal to the minimum radius of curvature;

generating plate portions by a projection process in which the inner wall surfaces are further moved outward in parallel by a distance that is equal to the thickness of

30   the sheet metal; and

generating a bending portion form that is a fillet connecting neighboring plate portions at the bending portion designated in the solid model.

2. The method according to claim 1, wherein a

5 thickness input box and a material selection pull-down menu are displayed as a screen display for entering the material and the thickness of the sheet metal, and an entered thickness value in the thickness input box is used as a key for searching a material master file so that one

10 or more found materials registered in connection with the entered thickness value are listed in the pull-down menu.

3. A sheet metal model generation device constituting a three-dimensional sheet metal CAD/CAM system, comprising:

15 a solid model generation portion for generating a solid model by modeling an outer shape of a sheet metal product;

an attribution information assigning portion for assigning entered attribution information including

20 material and thickness of a sheet metal to the solid model;

an open plane and bending portion designation portion for assigning entered designation information for designating an open plane and a bending portion to the

25 solid model;

a minimum radius of curvature obtaining portion for obtaining a minimum radius of curvature at the bending portion from the entered material and thickness of the sheet metal;

30 a downsized model generation portion for generating

a downsized model defined by the designated open plane and
a plurality of planes that are generated by moving a
plurality of planes of the solid model except the open
plane inward in parallel by a distance that is a sum of
5   the thickness of the sheet metal and the minimum radius of
curvature;

a plate portion generation portion for generating
inner wall surfaces by moving a plurality of surfaces of
the downsized model except for the open plane outward in
10   parallel by a distance that is equal to the minimum radius
of curvature and for generating plate portions by a
projection process in which the inner wall surfaces are
further moved outward in parallel by a distance that is
equal to the thickness of the sheet metal; and

15   a bending portion form generation portion for
generating a bending portion form that is a fillet
connecting neighboring plate portions at the bending
portion designated in the solid model.

4.   The sheet metal model generation device
20   according to claim 3, wherein the attribution information
assigning portion makes a screen display of a thickness
input box and a material selection pull-down menu, uses an
entered thickness value in the thickness input box as a
key for searching a material master file so that one or
25   more found materials registered in connection with the
entered thickness value are listed in the pull-down menu.

5.   A computer program product that is installed in
a computer that constitutes a three-dimensional sheet
metal CAD/CAM system for making the computer execute the
30   process for generating a sheet metal model including the

steps of:

assigning entered attribution information including material and thickness of a sheet metal to a specified solid model;

5   assigning entered designation information for designating an open plane and a bending portion to the solid model;

obtaining a minimum radius of curvature at the bending portion from the material and the thickness of the

10   sheet metal;

generating a downsized model defined by the designated open plane and a plurality of planes that are generated by moving a plurality of planes of the solid model except the open plane inward in parallel by a

15   distance that is a sum of the thickness of the sheet metal and the minimum radius of curvature;

generating inner wall surfaces by moving a plurality of surfaces of the downsized model except for the open plane outward in parallel by a distance that is equal to

20   the minimum radius of curvature;

generating plate portions by a projection process in which the inner wall surfaces are further moved outward in parallel by a distance that is equal to the thickness of the sheet metal; and

25   generating a bending portion form that is a fillet connecting neighboring plate portions at the bending portion designated in the solid model.

6.   The computer program product according to claim 5, wherein a thickness input box and a material selection

30   pull-down menu are displayed as a screen display for

entering the material and the thickness of the sheet metal,
and an entered thickness value in the thickness input box
is used as a key for searching a material master file so
that one or more found materials registered in connection
5   with the entered thickness value are listed in the pull-
down menu.

        7. A computer-readable storage medium storing a
computer program that is installed in a computer that
constitutes a three-dimensional sheet metal CAD/CAM system
10   for making the computer execute the process for generating
a sheet metal model including the steps of:

        assigning entered attribution information including
material and thickness of a sheet metal to a specified
solid model;

15   assigning entered designation information for
designating an open plane and a bending portion to the
solid model;

        obtaining a minimum radius of curvature at the
bending portion from the material and the thickness of the
20   sheet metal;

        generating a downsized model defined by the
designated open plane and a plurality of planes that are
generated by moving a plurality of planes of the solid
model except the open plane inward in parallel by a
25   distance that is a sum of the thickness of the sheet metal
and the minimum radius of curvature;

        generating inner wall surfaces by moving a plurality
of surfaces of the downsized model except for the open
plane outward in parallel by a distance that is equal to
30   the minimum radius of curvature;

generating plate portions by a projection process in which the inner wall surfaces are further moved outward in parallel by a distance that is equal to the thickness of the sheet metal; and

5   generating a bending portion form that is a fillet connecting neighboring plate portions at the bending portion designated in the solid model.